

EFFECT OF WEEDICIDES ON COLLAR ROT IN TUBE ROSE

ANITA MOHANTY¹, PRAVASINI BEHERA² & SWAGATIKA SRICHANDAN³

^{1,2}KVK, Puri, OUAT, Bhubaneswar, College of Agriculture, OUAT, Bhubaneswar, Khordha, Odisha, India

³KVK, Bolangir, OUAT, Bhubaneswar, Khordha, Odisha, India

ABSTRACT

Out of different commercial flower tube rose is an important flower plant of our country earning a lot of revenue and trade. Of different diseases affecting tube rose cultivation, collar rot induced by *Sclerotium rolfsii* Sacc. is an important soil borne disease causing devastating losses. In the present study, the sensitivity of the collar rot pathogen was investigated. Out of weedicides such as Basalin, Stump, Delchloro, Ronstar and insecticides Furadon in four concentration like 0.5,1.0,1.5,2.0 %, Ronstar (Oxydiazon) was found highly inhibitory to *S. rolfsii*. The highest percent of mycelia inhibition (99%) was noted in 2% concentration of weedicides followed by 1.5%.

KEYWORDS: Weedicides, Tube Rose

INTRODUCTION

Tuberose (*Polianthes tuberosa* L.) is one of the most important tropical ornamental bulbous flowering plants cultivated for production of long lasting flower spikes. It is popularly known as Rajanigandha or Nishigandha. It belongs to the family Amaryllidaceae. Tuberose is an important commercial crop due to pleasant fragrance, longer vase-life of spikes, higher returns and wide adaptability to varied climate and soil. They are valued much by the aesthetic world for their beauty and fragrance. It is used as cut as well as loose flower. The flowers are attractive and elegant in appearance with sweet fragrance. It has long been cherished for the aromatic oils extracted from its fragrant white flowers. Tuberose blooms throughout the year and its clustered spikes are rich in fragrance. The florets are star shaped, waxy and loosely arranged on spike that can reach up to 30 to 45 cm in length. The flower is very popular for its strong fragrance and its essential oil is important component of high-grade perfumes. 'Single' varieties are more fragrant than 'Double' type and contain 0.08 to 0.14 percent concrete which is used in high grade perfumes (Singh and Uma, 1995). There is high demand for tuberose concrete and absolute in international markets which fetch a very good price. Flowers of the Single type (single row of perianth) are commonly used for extraction of essential oil, loose flowers, making garland etc., while that of Double varieties (more than two rows of perianth) are used as cut flowers, garden display and interior decoration. Fragrance of flowers is very sweet, floral and honey-like and can help give emotional strength. It is known to improve an individual's capacity for emotional depth and can stimulate the right side of the brain and bring serenity to the mind and heart. The flower spike of tuberose remains fresh for long time and finds a distinct place in the flower markets. Due to its immense export potential, cultivation of tuberose is gaining momentum day by day in our country. Tuberose is a native of Mexico from where it spread to different parts of the world during 16th Century. This is one of the earliest cultivated plants, and may be extinct in its natural habitat.

Collar rot in tube rose is a fungal disease is caused by *Sclerotium rolfsii*, mostly affecting the roots. The initial symptom of this disease is flaccidity and drooping of leaves. The leaves become yellow and dry up. The fungus mainly affects the roots and the infection gradually spreads upward through the tuber and collar portion of the stem. Both tubers and roots show rotting symptoms. Thick cottony growth of the fungus is visible on the rotten stem and on petioles at the soil level. Drooping, yellowing followed by drying of leaves was marked as typical symptoms of collar rot associated in tuberose. The fungus attacked roots and tuber and killed the plant in case of severe infection. These symptoms are also in agreement with that of Dutta(1975). Water soaked lesions appeared on collar region of stem and flowering shoots as a result invaded portion of stem rotted and frequent lodging of infected plant occurred in high humid weather if the soil was wet. This type of symptom associated in collar rot of tube rose in Bhubaneswar condition is for the first time was observed. Rotting of stem might have favoured due to high humid, warm temperature and wetness of the soil.

MATERIALS AND METHODS

The plant samples were collected from farmers field. Each sample was labelled properly and taken into laboratory for examination of incidence of collar rot caused by *Sclerotium rolfsii*.

Isolation of Pathogens

With the moist blotter method recommended by ISIA(1953,1961), the diseased plant sample collected were washed and diseased collar parts were cut into pieces which were then washed and diseased collar parts were cut into pieces which were then disinfected with 1:1000 (0.1%) mercuric chloride solution. These were transferred to PDA slants after several washing in sterile water and incubated at 28°C±10°C. The culture were maintained by sub-culturing to time PDA slants.

The pure culture was obtained by transferring a young immature white *Sclerotium* from culture tube to a fresh PDA slant and incubated for 9-10 days. From this culture a young white *Sclerotium* was again transferred to sterilised PDA slant. Thus a pure culture was obtained and maintained by sub culturing.

In vitro evaluation of weedicides such as Basalin, Stump, Delchloro, Ronstar and insecticides Furadon were conducted. Four concentration like 0.5, 1.0, 1.5, 2.0 % were prepared and tested following poison food technique. Effect of certain weedicide and granular insecticides on percent inhibition of radial mycelia growth of *S.rolfsii* at different concentration

RESULT AND DISCUSSIONS

Data on percent mycelia inhibition as influenced by different weedicides are presented in table 1. From the table it was revealed that there was significant difference among weedicides in inhibiting mycelia growth. In the past some weedicides including oxydiazon reported partial effective in reducing the disease caused by *S. Rolfsii* (Backman and Rodriguez Kabana, 1972). In the present study effectiveness of some weedicides viz. Ronstar (Oxydiazon), stomp ((Pendimethalin) and Basalin ((Fluchlorolinz) against *S. Rolfsii* in vitro are illustrated. Application of furadon (Carbofuran)

@2 kg a.i /ha was reported effective in reducing root rot caused by *S. Rolfsii* in sugarbeet (Mukhopadhaya and Thakur, 1977). There was also significant difference between concentrations. In general the rise in concentration is

negatively correlated with the mycelia growth. The highest percent of mycelia inhibition (99%) was noted in 2% concentration of weedicides followed by 1.5% averaged over all weedicides/ insecticides. The interaction was also found significant.

Weed infestation is a serious problem in tuberose. Effective weed control is desirable for maximization of flower yield. Due to high labour cost and shortage of labourer for agricultural operations in city suburbs the non target effect of weedicides will thus be beneficial in reducing the collar-rot in tube rose.

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Table 1: Effect of Weedicides and Granular Insecticides on Percent Inhibition of Radial Mycelia Growth of *S.Rolfisii* at Different Concentration

Treatments	Mycelial Inhibition
Basalin(Fluchlorolinz)	94.0 (76.10)
Stomp(Pendimethalin)	96.0 (78.76)
Delchloro(Butachlor)	89.0 (70.49)
Ronstar(Oxadiazone)	100 (90.00)
Furadon (Carbofuran)	84.0 (66.30)
SE(m)+	0.45
CD(0.05)	1.27
Concentration	86 (67.99)
0.05%	93 (74.07)
1.0	95 (77.39)
1.5	99 (85.90)
2.0	0.40
SE(m)+	1.14
CD(0.05)	0.89
SE(m)+	2.55
CD(0.05)	